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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/534,378

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Tsuneharu Tomita

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EXAMINER

SNYDER, ZACHARY J

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,378	Applicant(s) TOMITA ET AL.	
	Examiner Zachary Snyder	Art Unit 2889	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4, 9-11 and 15-20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,624,571 B1 to Toyoyasu et al.

In regard to claims 1 and 10, Toyoyasu discloses a production method of an organic light emitting element comprising [see at least Figures 4(A)-4(G)]:

forming each layer of a transparent electrode and a metal layer sequentially on a transparent substrate (electrode 2 and masking layer 31);

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forming a first electrode composed of the transparent electrode and the metal layer, the first electrode having a same width as a pixel (transparent electrode 2 and masking layer are patterned to form display electrode 21, COL. 6, LINES 45-49);

exposing a strip-shaped area of the transparent electrode of the first electrode by removing the metal layer intersecting the transparent electrode which corresponds to the pixel, a size of the pixel being specified by a pair of opposite edges of the transparent electrode and a pair of opposite edges of the metal layer at the exposed strip-shaped area of the transparent electrode (figure 4E shows the removal of masking layer 31 wherein the remaining portions of the masking layer form two edges of the pixel while the other two edges of the pixel are formed by the opposite edges of the transparent electrode since the transparent electrode 2 and masking layer 31 were patterned into the shape of the pixel in figure 4B);

forming an organic layer to coat the exposed strip-shaped area of the transparent electrode (emissive layer 5); and

forming a second electrode on the organic layer (back electrode 6).

In regard to claim 2, Toyoyasu discloses the limitations of claim 1 and that the metal layer is formed of a metal that is etched selectively instead of the transparent electrode (shown in figure 4E only the masking layer 31 is etched).

In regard to claim 3, Toyoyasu discloses the limitations of claim 1 and that the metal layer is formed of a metal having a work function smaller than a work function of the material of

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the transparent electrode (masking layer 31 is formed on Cr, COL. 2, LINE 53, electrode 2 is formed of ITO, COL. 6, LINE 2).

In regard to claims 4 and 11, Toyoyasu discloses the limitations of claims 1 and 10 and that an insulating layer is formed on an upper surface of the metal layer (shown in figure 4G the formation of a dielectric layer 4).

In regard to claims 9, 15, and 18-20 Toyoyasu discloses the limitations of claims 1, 10, and 2-4 and that the first electrode is a grid-shaped electrode separated electrically, and removing the metal layer further comprises removing the metal layer in a form of a strip so as to cross the grid-shaped electrode (shown in figure 2 that display electrodes are formed in a grid shape with a spacing in between and in figure 4E that strip shape is removed from the masking layer 31).

In regard to claims 16 and 17, Toyoyasu discloses the limitations of claim 15 and in figure 1 that the light emitting element is used in an image forming device and a display unit (COL. 4, LINES 65-66).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-8 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,624,571 B1 to Toyoyasu et al in view of JP 2000-091083 to Naoki et al.

In regard to claim 5, Toyoyasu discloses the limitations of claim 1 but does not disclose that the metal layer is not more than 3 micrometers thick at the pixel edge.

However it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the metal layer to a thickness not more than 3 micrometers at the pixel edge because the metal layer, as discussed in regard to claim 1, is defining a pixel region that includes the organic layer and cathode. As disclosed by Toyoyasu, the organic layers and cathode are on the order of nanometers, particularly 10nm (COL. 9, LINE 30) for the organic layers and 150 nm for the cathode (COL. 8, LINE 36). It would be obvious not to form the metal layer at an order of magnitude 1000 times thicker than the other layers since this would result in an unnecessarily thick emission device.

Naoki teaches a production method of an organic light emitting element wherein a metal layer 12b defining a pixel area (figure 1a-b) is formed with a tapered edge (metal part 12b is etched into tapered shape, paragraph 23, shown in figure 1a). This edge is reducing in thickness towards the pixel edge and at the pixel edge is infinitesimally small.

It would be obvious to one of ordinary skill in the art to form the metal layer with a tapered edged so that it is not more than 3 micrometers thick at the pixel edge as taught by Naoki because the tapered shape allows for a uniform spread of the organic layer due to the angled shape.

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In regard to claims 6 and 12, Toyoyasu discloses the limitations of claim 10 but does not disclose that the removing of the metal layer comprises providing the metal layer with a portion reducing in thickness toward the pixel edge and forming at the pixel edge a stair of the metal layer on the transparent electrode so as to have a thickness not more than that of the organic layer.

Naoki teaches a production method of an organic light emitting element wherein a metal layer 12b defining a pixel area (figure 1a-b) is formed with a tapered edge (metal part 12b is etched into tapered shape, paragraph 23, shown in figure 1a). This edge is reducing in thickness towards the pixel edge and at the pixel edge is infinitesimally small and not more than the thickness of the organic layer.

Nokia does not teach that the metal layer is a stair shaped. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the metal layer with a stair shape since this would achieve the same results that the tapered shape would as discussed above in regard to claim 5.

In regard to claims 7 and 13, Toyoyasu in view of Nokia teaches the limitations of claims 6 and 12 but do not specifically teach that the angle of the slanting surface of the portion reducing in thickness is 30 degrees or less.

It would be obvious to one of ordinary skill in the art to form the metal layer with a reducing portion wherein the portion reducing in thickness has a slanting surface with an angle of 30 degrees or less because the tapered shape allows for a uniform spread of the organic layer

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due to the angled shape and a large angle will limit this benefit by increasing the surface tension of the organic material.

In regard to claims 8 and 14, Toyoyasu in view of Nokia teaches the limitations of claims 6 and 12 but do not specifically teach that the portion reducing in thickness is stepped such that the thickness reduces gradually toward the pixel edge.

Nokia does not teach that the metal layer is a stair shaped. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the metal layer with a stair shape since this would achieve the same results that the tapered shape would as discussed above in regard to claim 5.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary Snyder whose telephone number is (571)270-5291. The examiner can normally be reached on Monday through Friday, 9:30AM to 6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Toan Ton can be reached on (571)272-2303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Toan Ton/
Supervisory Patent Examiner, Art Unit 2889

/Zachary Snyder/
Examiner, Art Unit 2889